IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A demodulator circuit for emulating the down conversion of an input signal x(t) with a local oscillator (LO) signal, said demodulator circuit comprising:

a first mixer for receiving said input signal x(t), and mixing said input signal x(t) with a multi-tonal mixing signal $\varphi 1$, to generate an output signal $\varphi 1$ x(t);

a second mixer for receiving said signal $\varphi 1$ x(t) as an input, and mixing said signal $\varphi 1$ x(t) with a mono-tonal mixing signal $\varphi 2$, to generate an output signal $\varphi 1$ $\varphi 2$ x(t);

a first signal generator for generating said multi-tonal mixing signal $\varphi 1$;

a second signal generator for generating said mono-tonal mixing signal $\varphi 2$, where $\varphi 1$ * $\varphi 2$ has significant power at the frequency of said local oscillator signal being emulated; and

a power measurement circuit for measuring the power of said output signal $\varphi 1$ $\varphi 2$ x(t);

said second signal generator receiving a power level signal output from said power measurement circuit, and varying the characteristics of said mono-tonal mixing signal $\varphi 2$ to reduce the power level of said output signal $\varphi 1$ $\varphi 2$ x(t).

Claim 2 (Original): The circuit of claim 1 wherein said second signal generator varies the frequency of said $\varphi 2$ signal.

Claim 3 (Original): The circuit of claim 2 wherein said second signal generator comprises a voltage controlled oscillator (VCO).

Claim 4 (Original): The circuit of claim 3 wherein said second signal generator comprises:

a means for detecting changes in output power over time; and

a frequency control circuit which directs said VCO to incrementally adjust the frequency of said φ2 signal in response to changes in output power over time.

Claim 5 (Original): The circuit of claim 4 wherein said frequency control circuit responds to a failing trend in said power level over time by directing said VCO to continue adjusting the frequency of said φ2 signal in the same manner that it has been.

Claim 6 (Original): The circuit of claim 4 wherein said frequency control circuit responds to a rising trend in said power level over time by directing said VCO to invert the sense of the incremental adjustments being made to the frequency of said φ2 signal.

Claim 7 (Original): The circuit of claim 4 wherein said frequency control circuit further comprises means for smoothing changes in values of said output power, improving stability.

Claim 8 (Original): The circuit of claim 4 wherein said means for detecting changes in output power comprises:

a power measurement device with digital output;

a time delay device for receiving said digital output from said power measurement device and delaying said digital output; and

a comparator for comparing a current digital output to a delayed digital output, thereby determining whether power level is rising or falling over time.

Claim 9 (Original): The circuit of claim 5 further comprising a means for setting initial conditions of said frequency control circuit.

Claim 10 (Original): The circuit of claim 5 further comprising a clock which establishes timing for sampling and processing of output power signals for said frequency control circuit.

Claim 11 (Original): The circuit of claim 2 wherein neither of said $\varphi 1$ nor said $\varphi 2$ signals have significant power at the carrier frequency of said input signal x(t).

Claim 12 (Original): The circuit of claim 11 wherein neither of said $\varphi 1$ nor said $\varphi 2$ signals have significant power at the carrier frequency of said LO signal being emulated.

Claim 13 (Original): The circuit of claim 1 wherein said first signal generator comprises a signal generator for generating square wave signals.

Claim 14 (Original): The circuit of claim 1 wherein said second signal generator comprises a signal generator for generating square wave signals.

Claim 15 (Original): The circuit of claim 1 wherein unwanted power at baseband is minimized by adjusting the frequency of said $\varphi 2$ signal such that unwanted RF tones do not fall within the frequency range of the desired signal at baseband.

Claim 16 (Original): The circuit of claim 1 wherein unwanted power at baseband is minimized by adjusting the frequency of said $\varphi 2$ signal so that the probability of unwanted RF tones falling within the frequency range of $\varphi 1 * \varphi 2\ x(t)$ is significantly reduced.

Claim 17 (Original): The circuit of claim 1 wherein said second signal generator varies the phase of said $\varphi 2$ signal.

Claim 18 (Original): The circuit of claim 1 wherein said second signal generator is responsive to noise in said output signal $\varphi 1\ \varphi 2\ x(t)$ by adjusting the frequency of $\varphi 2$.

Claim 19 (Original): The circuit of claim 3 wherein said first mixer comprises an active mixer.

Claim 20 (Original): The circuit of claim 19 wherein said first mixer comprises an active mixer having adjustable performance.

Claim 21 (Original): The circuit of claim 19 further comprising a high pass filter electrically connected between said first mixer and said second mixer.

Claim 22 (Original): The circuit of claim 21 wherein said second mixer comprises a passive mixer.

Claim 23 (Original): The circuit of claim 22, wherein each of said active mixer, said high pass filter and said passive mixer is a differential device.

Claim 24 (Original): A method of emulating the demodulation of an input signal x(t) to the product of said input signal with a local oscillator (LO) signal, said method comprising the steps of:

generating a multi-tonal mixing signal $\varphi 1$;

generating a mono-tonal mixing signal $\varphi 2$, where $\varphi 1 * \varphi 2$ has significant power at the frequency of the local oscillator signal being emulated, and neither of said $\varphi 1$ nor said $\varphi 2$ having significant power at the frequency of said input signal x(t), said LO signal being emulated, or an output signal $\varphi 1\ \varphi 2\ x(t)$;

mixing said input signal x(t) with said multi-tonal mixing signal $\varphi 1$, to generate an output signal $\varphi 1\ x(t)$;

mixing said signal $\phi 1\ x(t)$ with said mono-tonal mixing signal $\varphi 2$, to generate said output signal $\varphi 1\ \varphi 2\ x(t)$;

measuring the power of said output signal $\varphi 1\ \varphi 2\ x(t)$; and

adjusting the characteristics of said mono-tonal mixing signal $\varphi 2$ to minimize the power of said output signal $\varphi 1\ \varphi 2\ x(t)$.

Claim 25 (Original): A computer readable memory medium for storing software code executable to perform the method steps of claim 24.

Claim 26 (Canceled).